

Name _____
Honors Physics
Period _____

Date _____
Electric Circuits WS #11H
Mrs. Nadworny

Circuits Review

Directions: Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

- A circuit contains three resistors (R_1 is 4.5 ohms, R_2 and R_3 are unknown) in series with a 9.0 volt battery. A voltmeter attached to R_1 reads 3.0 volts. A voltmeter attached to R_2 reads 2.5 volts.
 - Draw a circuit schematic of the circuit detailed above. Remember to use proper schematic symbols and label it.

 - Calculate the potential drop across resistor R_3 .

 - Calculate the current that passes through R_1 .

 - Determine the current that passes through R_2 and R_3 .

 - Calculate the resistances of R_2 and R_3 .

 - Calculate the equivalent resistance of the circuit.
- How many charges flow through a circuit if a 24 A current is allowed to flow for 2.70 minutes?

- When a $43\ \Omega$ resistor is connected to a battery, the current in the circuit is 0.54 A. What is the voltage of the battery?

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4. A circuit contains three resistors (R_1 is 15 ohms, R_2 is 25 ohms, and R_3 is 35 ohms) in parallel with a 15.0 volt battery.
 - a. Draw a circuit schematic of the circuit detailed above. Remember to use proper schematic symbols and label it. Also include an ammeter capable of reading the total current in the circuit and a voltmeter capable of reading the potential difference across the 25 ohm resistor.

 - b. Determine the potential difference across each resistor.

 - c. Calculate the current flowing through each resistor.

 - d. Calculate the total current flowing through the circuit.

 - e. Calculate the equivalent resistance of the circuit.

5. A tungsten wire that is 4.0 meters long with a *diameter* of 2.6 mm at 20° C. It is part of a circuit connected to a 7.5 volt battery.
 - a. Calculate the resistance of the wire.

 - b. Calculate the current in the wire.

 - c. Calculate the power used by the circuit.

 - d. Calculate the energy required to power the circuit if it runs for 4.5 minutes.